detail below. TRIP_MAIN_2 indicates a control circuit decision to open the switch **33** and RST_MAIN_2 indicates a control circuit decision to reset the switch **33**.

[0054] A GFCI detection circuit **35** includes IC**5** and receives signals from a GFCI neutral sensor **38** and GFCI hot sensor **39** to determine if a ground fault has occurred. In the preferred embodiment sensors **38** and **39** are hall effect sensors. Power for IC**5** is provided by the power taken from the unprotected hot bus bar **21** which passes through the resistor network **36** and protective diode **37**. When a ground fault is detected a SCR_TRIG signal from IC**5** is fed to NPN transistor Q**1** which triggers the GFCI_DET_**2** signal. Defection signal from detection circuit **35** is fed to an OR gate **31** and then to IC**12** to trigger the relays **32**. A GFCI test circuit **40** is provided consisting of a resistor network **41** and SCR TI and diode D**1**.

[0055] In operation the switch **33** is commanded by control input **34** to render the switch **33** conductive or nonconductive. Assuming the switch **33** is initially in a conductive state, either TRIP_MAIN_2 generated by the control circuit **90** or GFCI_DET_**2** from the detection circuit **35** will trigger the protection circuit **30** to cause the relay **32**, which in the preferred embodiment are of latching relays K**1** and K**2**, to command the switch **33** to change the state from conductive to nonconductive.

[0056] Referring now also to FIG. **6**, a schematic illustration of exemplary temperature measurement module **50** for detecting temperature of each of a protected hot bus bar **23** and protected neutral bus bar **24** is shown. Sensor **51** measures the temperature of the protected hot bus bar **23** while sensor **52** measures the temperature of the protected neutral bus bar **24**. Temperature sensor **51** comprises the resistor network thermistors R**26**, resistor R**28** and resistor R**33** and op amp IC7A. Temperature sensor **52** comprises the resistor network thermistors R**41**, resistor r**43** and resistor R**48** and op amp IC7D. Although the particular embodiment of temperature sensors **51** and **52** has been provided for exemplary purposes, those skilled in the art will immediately recognize that any suitable temperature sensor known in the art may be substituted for temperature sensors **51** and **52**. Thermistors R**26**, R**41** are coupled to the protected hot bus bar **23** and protected neutral bus bar **24** respectively. Thermistors R**26**, R**41** are NTC type thermistors and in the event of a temperature increase to the bus bars **23**, **24** as a result of high current or otherwise, the temperature of the thermistors R**26**, R**41** will increase, thereby lowering the resistance of thermistors R**26**, R**41**. Capacitors C**59** and C**60** provides a DC bias, blocking DC current to the sensors **51**, **52**. IC7A and IC7D are non-inverting AC coupled amplifiers coupled to rectifying diodes D**2** and D**9** respectively. D**11** and D**20** are Zener diodes providing over voltage protection. Resistors R**28** and R**43** take the voltage down to a safe level for the op amps IC7A and IC7D. D**21** and D**23** are bidirectional transient voltage diodes and provide over voltage protection. The change in resistance to thermistors R**26**, R**41** causes the voltage divider networks (R**26**, R**28**, R**33**) and (R**41**, R**43**, R**48**) to change the voltage provided to the op amps IC7A and IC7D which is amplified and provided to the control circuit **90** as signal H_TEMP_**3** and N_TEMP_**3**. The sensors **51**, **52** respond to the temperature of the bus bars **23**, **24** by sending a sensor signal indicative of a temperature to the control circuit **90**.

[0057] Referring now also to FIG. **7**, a schematic illustration of an exemplary power measurement module **60** for sensing power and current for each of a protected hot bus bar **23** and protected neutral bus bar **24** is shown. Sensor **61** measures the power of the protected hot bus bar **23** while sensor **62** measures the power of the protected neutral bus bar **24**. The power sensors **61**, **62**, each include a voltage measurement circuit **63**, **64**, and a current measurement circuit **65**, **66**, respectively.

[0058] Referring now also to FIG. **8**A a sectional view of the device **10** of FIG. **4** is shown, revealing a prong detector **70**. Protected hot has bar **23** and protected neutral bus bar **24** are disposed within the device **10**. Each of the protected hot bus bar **23** and protected neutral bus bar **24** are disposed adjacent to each of the apertures **17**, **18**. Specifically, the protected neutral bus bar **24** is disposed adjacent to the neutral aperture **17** and protected hot bus bar **23** is disposed adjacent to the hot aperture **18** to permit conduction with a user engageable contact, such as the prong **26** of a plug **13**A, when inserted into one of the apertures **17**, **18**. For example, when the prongs **26** of plug **13**A are inserted into apertures **17**, **18**, **19** the conductive material of the prongs **26** permit conduction with the hot and neutral contacts **23**, **24** (the ground contact is not shown).

[0059] The prong detector **70** is disposed in the device **10** and includes of an emitter **71** and detectors **72**, **73**. Each of the detectors **72**, **73** emit a first signal to indicate the absence an engageable contact in one of the apertures **17**, **18** and a second signal, distinguishable from the first signal, to indicate the presence of an engageable contact in apertures **17**, **18**.

[0060] Referring now also to FIG. **8**B, a diagram of one embodiment of a prong detector is shown, revealing the operative elements therein. In the preferred embodiment, the emitter **71** produces light and the detectors **72**, **73** produces a signal indicative of the level of light detected. Partitions **24** are provided to minimise the interference of ambient light on the detectors **22**, **23**. The partitions **74** each have an aperture **75** disposed therein to permit light from the emitter **71** to reach the detectors **72**, **73**. Each of the prongs **26** when properly inserted will interfere with light from the emitter **71**, causing a "no light" or "low light" signal from the detectors **72**, **73**. Therefore if both detector **72** and detector **73** indicate a low light signal, a plug is presumed to be coupled to device **10**. As such when the emitter **71**, detectors **72**, **73** and partitions **74** with apertures **75** are positioned properly, the presence or absence of the user engageable contact such as prongs **26** may be detected.

[0061] Although residential applications have been referenced herein those skilled in the art will immediately recognize that the application of the presence embodiment may be employed beyond residential and specifically may also employed in commercial and/or industrial applications. Additionally, even though light emitting and detecting methods are specifically disclosed herein, it is intended to be within the scope of the present embodiment that other means of detecting the presence of plug blades be substituted for the light emitting and detecting methodologies disclosed herein.

[0062] Referring now to FIG. **8**C, a schematic representation of a pair of prong detectors of FIG. **8**B, revealing the operative elements therein is shown. In the present embodiment, the emitter **71** is a light emitting diode, or "LED." For example, it maybe of the type such as a GaAs infrared emitter. The detector **12** is an infrared phototransistor, which, as more light strikes the phototransistor, the higher